

IMPROVEMENT OF SPELLING ACHIEVEMENT  
AND ITS RELATION TO IMPROVEMENT OF READING ACHIEVEMENT

by 500

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B. A., Marymount College, 1962

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A MASTER'S THESIS  
submitted in partial fulfillment of the  
requirements for the degree


MASTER OF SCIENCE

College of Education

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1969

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#### ACKNOWLEDGMENTS:

I wish to express my appreciation

- To Dr. Leo M. Schell, Professor of the School of Education, for his thoughtful encouragement and for the guidance he has given me while writing my thesis.
- To the members of my committee who spent their time in my behalf.
- To Mrs. Geneva Culbertson who cooperated by allowing me to use her room for my control group.
- To Mr. Harold M. Clark, Superintendent of USD #333, for permission to carry out the research and provide the necessary materials and equipment.
- To Mr. Paul Koehn, Assistant Superintendent of USD #333, who furnished many measurements and tests.
- To Mr. W. E. Gieswein, my principal at Lincoln School, for his assistance in many ways.
- To Mr. James Copp, consultant for the North Central Kansas Educational Resource Center, who assisted me with the pilot study for the accelerated and the slower learners.

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## CHAPTER I

### INTRODUCTION AND BACKGROUND

Notwithstanding the gigantic strides which have taken place in the world of education during the past fifty years, the teaching of spelling has changed very little -- it has been commonly taught by the same procedure, whereby the teacher pronounces the words and all the children in a given grade at a given time write a given spelling lesson.

Paul Koehn, Assistant Superintendent of Unified School District (USD) #333 in Concordia, Kansas, recently evaluated performance by means of graphs (See Appendix A) and found that spelling achievement received the lowest scores (in relation to other subject areas) at grades two through six. Because of these results, action research was undertaken to improve spelling performance among fifth graders in USD #333. Coincidentally, an investigation was made to determine the relation between spelling achievement and reading improvement.

#### I. THE PROBLEM

Statement of the problem. It was the purpose of this project (1) to make spelling self-pacing by putting the lessons on magnetic tape, (2) to allow for individual differences in spelling performance, (3) to use the discovery method within the linguistic approach to teaching spelling, (4) to provide a method of studying spelling for the slower learner, and (5)

to give the accelerated child opportunity for enrichment and challenge in the area of spelling performance.

### Limitations and Delimitations.

#### 1. Experimental Group

The experimental groups (EG) was a class of 32 fifth graders taught by Mrs. Doris D. Smith in Lincoln School, USD #333, Concordia, Kansas, during the school year 1968-69. Linguistically based lessons having the discovery approach were taped. No pace was established for the subjects (Ss). They were to proceed at the pace best suited to the needs of the Ss.

#### 2. Control Group

The control group (CG) was a class of 32 fifth graders taught by Mrs. Geneva Culbertson in Lincoln School, USD #333, Concordia, Kansas, during the school year 1968-69. The adopted basal text, My Word Book, Grade Five, published by Lyons and Carnahan, was taught according to the weekly lessons described in the textbook. All children were to proceed with a lesson a week.

#### 3. Limitations of both groups

The study was limited to the fifth graders (both male and female) from low socio-economic levels. The 64 (Ss) were from two intact fifth grade classrooms.

## II. DEFINITIONS OF TERMS

Self-Pacing method (S-P) allows each pupil to proceed at the speed best suited to his or her ability and desire. As soon as the pupil has spelled correctly the basic list of words, the power vocabulary, and taken the dictation to give functional usage in context of the words learned in the basal list, he then begins the next lesson.

Functional usage is the use of words from the basal list in sentences which denote their meaning.

Power vocabulary is the secondary list of words which the pupil spells by application of the phoneme-grapheme pattern or structural generalization he or she has just "discovered" in the basal list.

Discovery method presents a number of words (20 in the basic list of words) having the same phoneme-grapheme pattern or structural characteristics, in such a way that the child is led to see a rule or generalization which, hopefully, he can apply to hundreds of other words.

Traditional method or usual method of teaching in which the child is introduced to the words in the lesson on Monday, does workbook activities on Tuesday, takes a trial test on Wednesday, re-studies words and does other activities on Thursday, and takes the final test on Friday. Every child takes the same lesson and proceeds at the same pace regardless of his or her ability.

Linguistic Approach concerns the grouping of words in each lesson to consider some aspect (as nature, structure) and modifications of the language, including especially such factors as phonetics, phonology, morphology, accent, syllabication, and the relation between writing and speech.

Phonology is the science of speech sounds.

Morphology is the study and description of word function in a language including inflection, derivation, and compounding.

Phonemics is a branch of linguistic analysis that consists of the study of phonemes.

Phonetics is the study and systematic classification of the sounds made in the spoken utterance as they are produced by the organs of speech and as they register on the ear.

Phonics is a method of teaching to read or spell by learning the phonetic value of letters and letter groups.

Phonemes are the smallest units of speech that distinguish one utterance from another.

Graphemes are the sum of all written letters and letter combinations that represent one phoneme.

Morphemes are the meaningful linguistic units whether free form (as pin, child, load, spray) or a bound form (as the s of pins, the hood of childhood, and the ed of sprayed) that contains no smaller meaningful parts.

Inflectional form is a morpheme added to a word which changes the base word's grammatical meaning without changing



its part of speech classification; e.g. the plural -s, and the past tense -ed.

Derivational form is a morpheme added to a word which changes the part of speech classification of the base word; e.g., -ly which changes an adjective to an adverb.

Basic list consists of the twenty words in each spelling lesson on the tape which were chosen to represent a particular phoneme-grapheme structure (e.g. one-syllable words with a short vowel in a consonant-vowel-consonant (c-v-c) pattern).

Phoneme-Grapheme is the linguistic structure of hearing on tape and seeing in writing these patterns (e.g., vowel-consonant-consonant-vowel (v-c-c-v) patterns) like rain.

Special word list is the interest-centered list of words at the end of each taped lesson to challenge the good spellers (e.g., baseball words, chemistry, language words).

Phonetic generalization is the spelling rule which the student is led to discover by means of a series of words having the same phonemic structure, e.g., one-syllable words having a long vowel-consonant-silent e pattern.

Structural generalization is the spelling rule which is discovered by the change in structure, e.g., dropping the silent e when adding ed or ing.

## CHAPTER II

### REVIEW OF THE LITERATURE

Very little writing has been done concerning the individualizing of spelling since the modest birth of the linguistic approach nearly twelve years ago. Only a brief summary of the work done on problems very closely related to spelling and reading improvement by the use of individualized and self-pacing procedures will be given here.

Some writing has been found concerning the discovery or induction approach in connection with the use of media as applied to high, middle, and low levels of achievers in spelling. This helps to solve the problem of individual differences.

#### I. LITERATURE ON THE LINGUISTIC AND INDUCTIVE APPROACH

Since the opening shots were fired in 1957 by Noam Chomsky, a linguist at Massachusetts Institute of Technology, with the publication of his book, Syntactic Structures (1), and intellectual revolution has been continuing in the methods of teaching language arts in the classrooms of this country. One report says that "virtually every major publisher of language arts texts has come out with a grammar,

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1. A Special Report. "Linguistics and the Language Arts", Grade Teacher, March, 1969, pp. 91-4, 134.

spelling, or reading programs based on its principles." With the evidence pointing to the conclusion that linguistics will change the language arts curriculum so that the next decade will probably witness it as the only approach to teaching reading, spelling -- the language arts, a closer look at its application to spelling and reading is warranted.

Children learn the basic sound and grammatical structures of English during the pre-school years. Long before they enter school they speak with meaning and they listen with comprehension. The young child has been inductively oriented by his own natural approach, since he has obviously reached his own conclusions about language by a discovery approach appropriate to his level of learning. School brings the necessity to learn to read language and write it. (2) Certainly it would seem the child's discovery method should be continued in his spelling and reading.

Bruner has argued convincingly in The Process of Education that any important concept can be taught in some honest form at all age levels. As early as first grade, elementary school children can be taught to develop several fundamental concepts about language; concepts which can be expanded and deepened throughout the years of elementary school.

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2. Dolive, Earline, Linguistics in the Elementary School, Intermediate Level. ERIC 020158. Sam Houston State College. 84 p.

Kottmeyer presented a third edition of Basic Goals in Spelling 1968 (3) in which lists of words were grouped according to sound-symbol and structural patterns. The words for each grade are grouped so that pupils learned, inductively, spelling generalizations which applied to thousands of words -- not just those in that particular spelling list. A sound psychological procedure has been followed so that children develop the fundamental concepts of linguistic patterns grade by grade, and lesson to lesson within each grade; beginning with the simple c-v-c pattern and progressing to the more difficult and less used patterns. The discovery method was employed.

From the literature on linguistic studies of the orthography, from neurological research, and from psychological investigations, Dr. Richard E. Hodges of the University of Chicago (4) says "rather drastic revision of the current instructional practices in the teaching of spelling" is due. It would seem that these patterns for spelling would be psychologically sound because there must be deliberate development of the understandings of the basic concepts concerning the

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3. Kottmeyer, William, and Claus, Audrey, Basic Goals in Spelling, Grades 2-8, St. Louis: McGraw-Hill, Inc. Third Edition, 1968.

4. Hodges, Richard E. "The Psychological Bases of Spelling" Elementary English, Vol. XXXIII. October, 1956, No. 6 pp. 629-635.

structure and function of the orthography available to the learner so as to guide his spelling and writing of words (5).

Here are many evidences that intellectual activity is a form of information processing. According to recent significant psychological researches which have important implications for spelling instruction (6), "these studies indicate that effective learning is in large part dependent upon how adequately basic processes are structured." This becomes an effective guide to those planning to develop systematic orderings of information, which may be termed strategies for learning.

Psychologically these strategies develop from: (1) contiguous experiences with similar kinds of information; (2) assimilating these experiences to form conceptualizations of the situation; (3) frequent opportunities to apply these conceptualizations to the solving of problems; and (4) opportunities to use them in a variety of learning situations." These above strategies were developed from the work done by Vinacke in 1952 (7). After this intimate look at the learner,

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5. Penfield, Wilder and Lamar Roberts, Speech and Brain Mechanisms. Princeton, New Jersey: Princeton University Press, 1959, 286 pp.

6. Ausubel, David P. "Cognitive Structure and the Facilitation of Meaningful Verbal Learning", Journal of Teacher Education, June, 1963, pp. 217-22.

7. Vinacke, W. Edgar. The Psychology of Thinking. New York: McGraw-Hill Book Co., Inc., 1952, 392 pp.

it would seem that the linguistic structure of a spelling program holds promise of an efficient and effective teaching and learning procedure for all concerned.

## II. LITERATURE OF INDIVIDUALIZATION OF INSTRUCTION

Research concerning Bloom's concept of individualized instruction indicates that self-pacing is an ingredient of his idea. Students do not leave one unit and begin a new one until they have attained a predetermined level of proficiency in the former unit. He insists they must be allowed varying amounts of time (and practice) to achieve mastery of specific instructional goals. This part of his concept is particularly applicable to units of spelling which are taped so that students have opportunity to pace their learning.

Provision for frequent and diagnostically-oriented evaluation of each student's progress is necessary if they are allowed to proceed at varying rates in the school program. Because of this, the teacher's role changes from being primarily one of disseminating information to one of (1) diagnosing pupils' needs, (2) planning and preparing each child's instructional program, (3) working with pupils in small groups or individually, and (4) supervising teacher clerks, teacher aides, and junior or less experienced teachers.

In the attempt to individualize instruction, Bloom says (8) that students do become more involved in the learning process by assuming more responsibility for their own development. Almost every child becomes a teacher a part of the time when he really becomes involved.

Research seems to show that the trend of instruction is more and more toward the child rather than toward subject matter. In a report (9) of the Colorado Western States Small Schools Project, spelling was chosen as a beginning point for individualized instruction because it (1) was most in need of help and (2) they could not individualize all phases of English instruction at once in the Junior High.

In this report a quote is given from Hook, H. N., The Teaching of High School English from the section: "Research in the Teaching of Spelling" in which he says, "Even more profitable has been the research of men and women who have studied children rather than words. The difference in the two approaches is this: The word specialist asks 'What are the characteristics of the words that people need to know how to spell?' The word specialist is interested in the words to be mastered; the child specialist is interested in building students' desire and power to spell and master words".

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8. Ibid.

9. Moss, Martha, "A Plan for Individualized Instruction in Spelling in Junior High", ERIC ED 011793. Colorado State Dept. of Education, Denver, 1964, 18 p.

According to research it would seem that the key words are 'desire' and 'power' to spell. Martha Ross (10) in her study quotes where he says under the heading "Building the Power to Spell": "If students are sufficiently motivated, many of them will be willing to go through the rather laborious steps recommended by Ernest Horn and Ernest Ashbaugh, two of the foremost authorities on spelling. These steps are slightly modified by NCTE Committee, as follows:

'In studying a word, a good procedure for a learner is:

1. to say each syllable distinctly and look at the syllable as he says it;
2. with eyes closed to think how the word looks;
3. to look at the word again to check his impression;
4. to write the word and check with the book; and
5. to repeat twice the writing and checking;

If any one of these steps causes him to misspell the word, he should copy it in his spelling notebook for review;

6. finally, he should write the group of words studied as a parent, brother, sister, or friend pronounces them for him.' "

From the same documentation of research, E. W. Dolch comments on the characteristics of a good speller:

"...the 'good speller' (1) checks his guesses, (2) proof-reads for spelling, and (3) studies the spelling of new words, which means: (a) he gets the exact pronunciation of each new word, (b) he asks if this sounding tells the letters, and (c) where it does not, he finds a means of remembering the exact letters at the difficult spot."

Dolch goes on to say that this speller will make this rapid check in all subjects and do it in a few seconds only.



In another section of Hook's chapter on spelling, Ross quotes him saying "inaccurate pronunciation of such words as athletic, divide, government, laboratory, recognize, may lead to misspelling. The proverbial stone thrown at one bird, in-correct pronunciation, may often glance off and kill a second, faulty spelling." (11) To help correct the mispronunciation, he suggests that pairing of students makes them aware of it and both will profit.

In her report of the Colorado Western States Small Schools Project, Martha Ross reported in her evaluation (12) that students did as well as by the traditional approach. They simply worked in pairs with lists of words that were prepared for various levels of difficulty. There were eight lists for the A level (4th grade), eight lists for the B level (5th grade), sixteen lists for C level (6th grade) which would need to be revised, she said to include another level, and seventh, eighth, and ninth levels were D, E, F levels.

She said that the most significant result is not measurable, but is the attitude of the students. The fact that he can spell the word lists has changed his attitude of hopelessness with which most poor spellers face their spelling lessons to one of hope... The attitude of the good spellers changed from boredom to one of wanting to work, also. They

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11. Ibid.

12. Ibid.

do more competing among themselves than any other groups." The last result which she listed was that students take the responsibility for their own progress. Each one seemed to realize that he could go as far as he wanted. The role of the teacher changed from pronouncing words and trying to make students study, to helping and watching each child's progress.

Another individualized approach toward significant achievement over the whole-class approach in teaching spelling in elementary grades was a group of three studies at Brigham Young University (BYU) (13). These studies included levels of ability from High, Medium, to Low in grades three, four, five, and six. The 4,042-word Rinsland list organized by Hildreth into eight levels according to frequency was used, plus 884 words used most frequently by adults and not by children as listed by Horn. This list completed levels 9 and 10.

Children were assigned by placement tests and each child chose or was assigned a partner at about his ability level. They worked three days a week testing, the fourth day was activity and study, and the fifth day was generalizations and games. Once a week the teacher found out how far each partner had progressed and noted it in her record book.

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13. Alfred, Ruel A. and others. "Three Studies in Elementary Spelling", ERIC ED 015087. Provo, Utah, Brigham Young University, October, 1964.

In the findings for the study no significant difference in the BYU Individualized Approach and the Whole-Class Approach for grades 3-6 was found. There was a significant difference in grade two. In the comparison of Formal Spelling and BYU Individualized Approach and the Whole-Class Approach for children with high, medium, and low reading ability in grades 3-6 significant differences in high reading ability groups were found in grades 3 and 6 only. There is no significant differences for medium and low reading ability in any grade 3-6. In 29 comparisons there were 19 in favor of BYU Individualized Approach, 4 of which were significant, and 10 in favor of the Whole-Class Approach, none of which were significant.

The conclusions were that the individualized approach is responsible for as much student progress as is the whole-class approach in all tested cases, and in some instances it is responsible for significantly more progress.

Second grade students favor individualized approach:  
 (1) Some students were able to begin earlier, whereas, in the whole-class approach they were required to wait until the majority of the class were ready.  
 (2) Some of the children progress rapidly when permitted to go at their own rates, until they catch up with their level of maturity.

Another study showed significant differences in grades four and five favoring BYU spelling plus SRA Lab in functional spelling. (14)

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14. Ibid.

### III. OTHER LITERATURE AND THE USE OF MEDIA

There must be dynamic instruction which creates a strong desire on the part of the student to gain spelling power. There need not be a long wait for reorganization of classrooms, team teaching, additional funds, and administrative directives. Individualized instruction can be done now, and it can be done practically and effectively by any teacher with careful use of independent activities. These independent activities using audio-visual media could provide much of the needed motivation.

In order to provide for these independent study activities, Bloom (15) says that classrooms must be arranged differently in a physical sense. He believes we must apply a "systems analysis" approach to schools as learning centers. The classroom must become much more flexible in its daily schedule to allow for the independent study activities with various media to be scheduled so that individual children may progress from one area to another and yet allow for the varying amounts of time and practice needed by individual pupils. There will be children who will assist in providing proper materials at the time needed according to the schedules. Spelling lends itself very well to this approach.

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15. Bloom, B. S., "Characteristics of Individualized Instructional Programs", Appendix B.

Margery Northrop (16) says to give children blocks of time in spelling which they manipulate to their own satisfaction and at their own level of achievement. She says, "As all children are working independently on projects, the teacher is free to give individual and small group instruction. More learning can be accomplished if a child and a teacher sit down together in a conference for a few minutes to discuss that child's own work than can ever be done in a traditional program."

Goodman (17) points out that research shows that ineffective instruction takes place in the "shot-gun method" of teaching skills to all members of a group or class at the same time. Each child has his own needs and so it is questionable whether a skill should be introduced to a whole class at any one time. Certainly it would seem that the use of media would individualize part of the instruction.

Werner and Norris (18) report that "the basic ingredient of any successful instructional program is the experienced classroom teacher." They believe that an intensive program of

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16. Northrop, Margery V., "Individualized Language Arts, Why Not?" ERIC ED 015189, 1967, 7 p.

17. Goodman, Kenneth., "A Linguistic Study of Cues and Miscues in Reading", ERIC ED 015087, February, 1964, 31 p.

18. Werner and Norris, "Enriching Reading through Use of Media - Intermediate Grades", ERIC ED 020092, March, 1968, 19 p.

audio-visual instruction, when utilized by a creative teacher, is not a supplement but an integral part of the entire curriculum.

Jean Piaget's basic studies of the development of children's intellectual abilities further indicate the significant role that multisensory learning plays in conceptual development according to Hunt's Intelligence and Experience. (19) Hartman (1961) in a review of the research and proposed model for the single and multiple channel communication proposed that "redundant information simultaneously presented by audio and print channels is more effective in producing learning than is the same information in either channel alone." (20) McLuhan has a widely known theory of involvement of the student in the learning process in as many simultaneous sensory exposures as possible.

Because there is ample evidence to support the linguistic approach that oral language is primary to written language and that the written code is in large part a reflection of the oral code, it becomes clear that aural-oral abilities have the highest priorities in the spelling process. Certainly it would follow that children would profit by the

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19. Hunt, J. McV., Intelligence and Experience., New York: The Ronald Press Co., 1961, 416 pp.

20. Bloom, Benjamin, "Single and Multiple Channel Communication: A Review of Research and Proposed Model," Audio-Visual Communication Service, 1961.

use of media emphasizing the aural-oral approaches. In the past, children have been greatly handicapped in the development of spelling skills because they have not had the use of all the many sensory tools available today. In addition, they often have not been helped to understand the many significant similarities in the orthography, its structure, and the combination of learning strategies possible for them to use.

Applying psychological, neurological, and structural linguistic concepts to the media of the present day must have great potential for spelling achievement.

Hodges (21) states that "sequential training in helping children to listen for phonemes in relation to their placement in words, to the way in which they are enunciated, and to the basic regularity with which they are represented by graphemes in writing creates a basis for effective spelling power."

By concurrently remembering what has been reviewed concerning the effectiveness and efficiency of psychological and neurological strategies for learning and the proposals for the multiple sensory audio and print channels, it would seem obvious to say that the time is come for the presentation of spelling in the classrooms of this nation by the use of all the improved methods. At the same time remembering that there are varying degrees of success to be determined by the proper combination of approaches.

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21. Hodges, op. cit., pp. 629-635.

## CHAPTER III

### DESIGN OF THE EXPERIMENT

#### I. HYPOTHESES

The study incorporated the following hypotheses:

1. Do fifth graders make a significant improvement in spelling achievement when self-pacing materials on the tape recorder are used as compared to fifth graders who use a commercial workbook with the teacher pronouncing the words in the weekly lessons?

2. Is there any significant observation between reading and spelling achievement when the tape recorder is used for spelling as compared to the commercial textbook weekly lessons?

#### II. PROCEDURE

##### With the Experimental Group

The procedure used was an action research project with fifth graders in the Lincoln School, Concordia, Kansas, USD #333, from September, 1968 through April, 1969. The experimental group (EG) of 32 pupils comprised the subjects (Ss) of the study under the direction of Mrs. Doris D. Smith.

##### 1. Pre- and Post-test Measures

In September, 1968, the Otis Quick-Scoring Test of Mental Ability (21) was administered in order to determine

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21. Otis Quick-Scoring Tests of Mental Ability (Fm) published by--Harcourt, Brace, World, Inc., New York.



whether there was any significant difference between the EG and the control group (CG), in terms of mental aptitude.

A random sampling of 100 words chosen by counting to every sixth word from the fifth grade spelling list (22) to be administered to all Ss early in September of 1968 and again in April, 1969, to help measure any significant change in either EG or the CG.

The Iowa Test of Basic Skills in Spelling (23) was administered to both groups to see if there was any difference in mean achievement and variance at the beginning and at the end of the experiment.

The Weekly Reader Diagnostic Silent Reading Tests (24) were administered to both groups in October, January, and April in order to observe phases of the reading comprehension, such as, interpretation of stated facts, word meaning, selection of main ideas and comprehension.

In November the SRA Mental Ability (25) and SRA Achievement Tests (26) were administered by the North Central Kansas

22. See Appendix F for the random test.

23. The Iowa Test of Basic Skills in Spelling, Houghton Mifflin, Boston, Massachusetts.

24. The Weekly Reader. "Diagnostic Silent Reading Tests", American Education Publications, Education Center, Columbus, Ohio.

25. SRA Mental Ability Tests, Science Research Associates, Chicago, Illinois.

26. SRA Achievement Tests, Science Research Associates, Chicago, Illinois.

Educational Resource Center. These same tests were administered again in late April for purposes of comparison.

## 2. Materials for Experimental Group

Because the administration of USD #333 wanted to be sure there would be no omission of spelling words which the EG would have had presented to them in the adopted text, My Word Book, Grade Five (27), the word list for Basic Goals in Spelling, Grade Five, (28) was compared with it and all the words which were not found in the latter text were listed. (See Appendix E). The 366 words which were in My Word Book, Grade Five, but not found in Basic Goals in Spelling, Grade Five, were categorized linguistically so that they could be studied as each of these linguistic skills was presented. (Appendices G and H show examples of these presentations.) Care was taken to present only one phoneme-grapheme relationship at a time so that distinct patterns would be learned. Less-frequently appearing patterns and unusual spellings were introduced later in the year after the most-often used patterns such as c-v-c were first taught.

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26. SRA Achievement Tests, Science Research Associates, Chicago, Illinois.

27. My Word Book, Grade Five. Lyons and Carnahan.

28. Basic Goals in Spelling, Grade Five, Kottmeyer and Claus, 3rd ed. 1968, McGraw-Hill publishers.

Each lesson consisted of a basic list of twenty words spelled according to a basic pattern or generalization and children were led inductively to find the spelling pattern. After learning the basic list, they would advance to the power vocabulary of words which were similar and could be spelled by applying the pattern or generalization. The 366 words were a part of these vocabularies. A special word list of six or eight words selected to represent a center of interest was given at the end of each lesson as a challenge to the better spellers.

In order to develop functional spelling of the basic lists, Ss wrote dictated sentences at the close of each taped lesson so that each word was used in context rather than in isolation.

Ss were taught thirty lessons inductively from the tape recorder and given opportunity to "discover" the generalizations which were arranged sequentially in the order deemed most reasonable by the experimenter:

Unit I .....	Spelling Short-Vowel Words
Unit II .....	Spelling Long-Vowel Words
Unit III .....	More Long-Vowel Words
Unit IV .....	Spelling Two-Letter Consonant Sounds
Unit V .....	More Vowel Spellings
Unit VI .....	Sentence Test by Dictation
Unit VII .....	Irregular Vowel Spellings
Unit VIII .....	Other Vowel Spellings
Unit IX .....	Vowels Before r
Unit X .....	Silent Letters
Unit XI .....	Spelling Compound Words
Unit XII .....	Sentence Test by Dictation
Unit XIII .....	Dividing Words into Syllables

Unit XIV .....	More about Syllables
Unit XV .....	Another Syllable Pattern
Unit XVI .....	Syllables by Sound
Unit XVII .....	Spelling le Endings
Unit XVIII .....	Sentence Test by Dictation
Unit XIX .....	Spelling the g Sounds
Unit XX .....	Spelling the c Sounds
Unit XXI .....	More Consonant Spellings
Unit XXII .....	Spelling ing Words
Unit XXIII .....	More ing Words
Unit XXIV .....	Sentence Test by Dictation
Unit XXV .....	Plurals for Words Ending in y
Unit XXVI .....	Spelling Numbers
Unit XXVII .....	Abbreviations
Unit XXVIII .....	Unexpected Spellings
Unit XXIX .....	Spelling Long Words
Unit XXX .....	Sentence Test by Dictation
Unit XXXI .....	Spelling Homonyms
Unit XXXII .....	Spelling Prefixes
Unit XXXIII .....	More Prefixes
Unit XXXIV .....	Spelling Suffixes
Unit XXXV .....	More about Suffixes
Unit XXXVI .....	Sentence Test by Dictation

On the tape box the calibrations were recorded so that the Ss could easily find the one needed from the file of tapes. Four lessons were put on each of the 1200-foot reels; eight reels recorded the thirty lessons for grade five.

As soon as the EG Ss had successfully completed their lessons, they proceeded to the next lesson, thus choosing the pace best suited to their individual abilities. Some children took longer than others to perfect a lesson and they were allowed as many times at the tape recorder as they needed. Those who could take the lesson once and make no mistakes proceeded to schedule the next lesson.

At the end of each five lessons the Ss would ask the teacher to read his test to him. This test (See Appendix I)

consisted of six sentences containing twenty words from the five previous lessons and provided the teacher with the opportunity to observe: (1) the ease and the mastery of the spelling of the words by the S, and (2) the functional applications of the generalizations.

Schedule sheets (See Appendix M) helped the EG Ss to select the time for the next lesson on the tape recorder. In this way spelling became individualized to the ability and the pace of each child. After a week or two the children began to establish patterns for pacing and study so that the tape recorder could handle the needs of the 32 pupils with the use of as many as fourteen headphones. After about six weeks, one box of headphones (7 head sets) became sufficient because the range of lessons had become greater and fewer children were working upon the same lesson.

At the end of six weeks, a progress report like the one shown here was sent home in the grade card of each EG S. It showed the number of lessons completed and the number of times the tape recorder had been used during that particular six weeks period:

SPELLING PROGRESS REPORT						
6 WEEKS PERIOD	1	2	3	4	5	6
Lessons Completed						
Times the recorder was used						
Child's Name	_____					

This procedure reported achievement and also the amount of effort to accomplish it. The record for this report was kept by each EG subject on a card in the wall file like this:

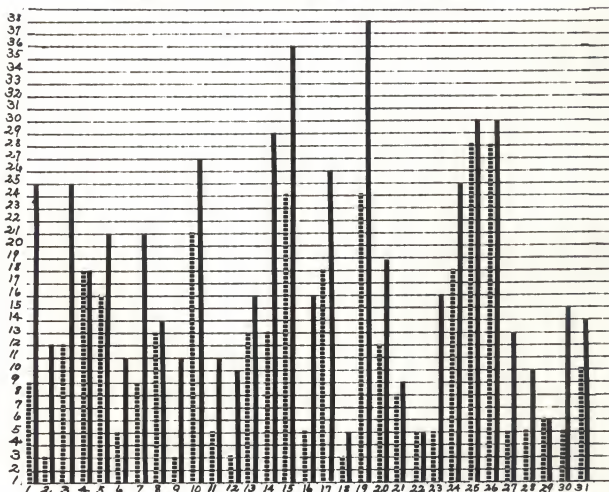
Lesson No.	Times Tried	Dates
CHILD'S NAME _____		

This card was changed each six weeks to begin the new period.

By the end of the second six weeks it became apparent that a few Ss were about to finish what normally would be a semester of work and a few were still working with the first six lessons. On the following page is a chart of the effort and achievement of the class at that time. The cross bars indicate the lessons completed (achievement) and the black bars indicate how many more times the tape recorder had been used to attain that achievement (effort).

By the end of the semester it became apparent that there would need to be another phase to the experiment --

CHART SHOWING END OF TWELVE WEEKS  
COMPARING SPELLING ACHIEVEMENT AND SPELLING EFFORT



The horizontal lines represent the total number of lessons completed where the solid black bar crosses, or the number of efforts with the tape recorder where the broken bar crosses. Pupils are represented by numbers across the bottom of the chart.

those who had completed the fifth grade level of 36 lessons needed a new program of study, and those who were lagging behind needed a program of easier materials and more closely guided study instructions.

For the former group, teams of pupils made individual lists of words from "word banks" they had been using in reading vocabulary work. They selected words they wished to know how to spell. The script each S wrote for his or her own tape contained twenty words with sentences to show the meaning of the words. As soon as they were able to pass the lesson and that of the team-mate, they would both proceed to make another lesson. (See Appendix O for lists of words.)

Each member of the slower group was equipped with a Flash-X (29), a disc of words taken from third and fourth grade levels of difficulty, and a cartridge for the Cassette tape recorder which gave instructions for learning a list of ten words arranged according to a specific phoneme-grapheme pattern. (See Appendixes J and K for Examples of these lessons.) By using a "hear-say-look-spell-write-check" approach on a level at which they could succeed, these children could make progress. They were forced to develop study procedures and room distractions could not annoy them. After studying by this set pattern the ten words, the Ss would then turn their papers over and take a test over those ten words

---

29. Flash-X is a simple tachistoscope, manufactured by Educational Developmental Laboratories, Huntington, New York.



and also another ten words having the same construction as those they had studied. In this way they had opportunity to apply the generalization to be used.

The middle third of the class remained on the original materials where they were succeeding at the expected pace of fifth grade pupils.

### With the Control Group

The control group consisted of 32 subjects in the fifth grade under the instruction of Mrs. Geneva Culbertson.

#### 1. Pre- and Post-test Measures

In September the Otis Quick-Scoring Tests of Mental Ability (30) was administered in order to determine whether there was any significant difference between the E and C groups in terms of mental aptitude.

The random test of 100 words, the Iowa Test of Basic Skills in Spelling, the Weekly Reader Diagnostic Silent Reading Test, the SRA Mental Ability Tests and SRA Achievement Tests, and the Stanford Achievement Test Intermediate II Form W were administered at the same times as they were to the EG in the manner explained on pages 20, 21 and 22.

#### 2. Materials for the Control Group

In the CG each week's lesson in My Word Book, Grade Five was studied. The words were pronounced by the teacher on

Monday and on Tuesday the word activities were carried out in the workbook. A trial test was pronounced by the teacher on Wednesday and the words missed were restudied on Thursday. No provision for self-pacing or level of ability had been made because everyone took the same lesson at the same time.

My Word Book has words arranged according to centers of interest rather than by linguistic generalizations as was done for E Ss. There were thirty lessons and six tests for the year.

## CHAPTER IV

### RESULTS

It is the belief of the experimenter that the finest and most appropriate educational measurements, instructional tools, and statistical analyses should be employed in any research problem. Certainly this was a challenge to select them, due to the great number of finely developed tests for spelling and reading, the recent linguistic developments both in reading and spelling, the use of the discovery approach or inductive method, and the rapid growth in statistical methods in education. Coupled with the above tools was the rapid and recent development of the use of media in the assistance to the individualization of learning.

From the findings which follow, it is hoped that the reader may get a helpful suggestion for improvement in the achievement of spelling and reading. He may wish to develop some phase of the study in a future research problem.

#### I. FINDINGS AT THE BEGINNING OF THE STUDY

In order to determine whether the EG and CG were nearly the same in mental aptitude, the Otis Quick-Scoring Mental Ability Tests (Beta, Fm) were given in September, 1968. The following Table I shows that there is no significant difference in mental aptitude between EG and CG:

TABLE I  
OTIS QUICK-SCORING MENTAL ABILITY RESULTS

	N	M	$\sum x^2$	Variance
EG	31	108.13	4439.39	143.21
CG	33	109.42	4304.30	130.43

Since  $p > .50 > .05$ , there was no significant difference between the two groups.

On September 24, 1968 the Iowa Test of Basic Skills in Spelling was given as a standardized pre-test measurement. Table II shows that there was no significant difference if  $p$  is set at .05, because  $.10 > p > .05$ .

TABLE II  
IOWA TEST OF BASIC SKILLS  
IN SPELLING

	N	M	$\sum x^2$	Variance	Standard Deviation
EG	31	46.71	6636.26	214.07	14.63
CG	33	40.79	8495.38	257.44	16.04

Using the Pearson Product Moment ( $r$ ) to obtain the correlation between the IQ and the Iowa Test of Basic Skills

in Spelling, the following Table III shows a correlation:  
 $r$  (CG) is .666 and  $r$  (EG) is .699.

TABLE III  
 CORRELATION BETWEEN IQ AND IOWA SPELLING SCORES  
 USING THE PEARSON PRODUCT MOMENT ( $r$ )  
 COMPUTATION

	X IQ Mean	Y SPELLING Mean	$\Sigma X^2$	$\Sigma Y^2$	$\Sigma XY$	$r$
CG	109.42	40.79	4304.30	8495.38	4027.91	.666
EG	108.13	46.71	4439.39	6636.26	3782.09	.699

To find the Achievement Expectancy of the EG and CG, the formula IQ time number of years in school  $(IQ \times SA) + 1$  was used with the September scores.

EG equals (108.13 times 4) plus 1 equals 5.33

CG equals (109.42 times 4) plus 1 equals 5.38

Inspection soon shows that the expectancy of achievement between the EG and CG was quite close for spelling.

## II. FINDINGS OF THE FIRST HYPOTHESIS

Do fifth graders make a significant improvement in spelling achievement when self-pacing materials on the tape recorder are used as compared to fifth graders who use a commercial workbook with the teacher pronouncing the words in the weekly lessons?

One hundred words were chosen at random from the words which the Ss would study during the year. This was done by selecting every sixth word and placing them in groups according to the linguistic generalization to which they belonged. In this way, some analysis could be made of particular spelling difficulties and determine whether on the post-test they had been corrected by the approach used in the EG. (See Appendix F for the Random Test.)

In Tables IV and V on pages 35 and 36 a tally of the words from the 100-word random test appears to show the relation of linguistics training in the EG and the traditional approach of the CG at the time of the pre-tests and post-tests.

Thirteen groups representing different phases of the grapheme-phoneme structures of the spelling program used have been tabulated. The total errors for each part of the post-test (both CG and EG) have been subtracted from the total errors for each part of the pre-test. The totals of the differences show the total number of words learned by the groups.

To summarize the tabulations of Tables IV and V, Table VI, page 37, shows the total of the errors for the pre-tests for EG and CG, the total of the errors for the post-tests for both groups and the percentage of errors corrected. This shows a gain for the EG of 16.4% over the CG.







TABLE VI  
SUMMARY OF THE RANDOM TEST RESULTS  
IN SPELLING

	Total Errors of Pre-tests	Total Errors of Post-test	Total of Errors Corrected	% of Errors Corrected
EG	1146	655	491	42.8
CG	981	722	259	26.4

It would seem that the results of the random test were more valid for the purpose of this study than those shown in Table VII when a standardized test was used. Like most of the standardized tests, the Iowa Test of Basic Skills for Spelling requires the child to select the incorrectly spelled word, which is really a proof-reading skill to a large degree. Children using the tape recorder were really trained to spell according to structural and grapheme-phoneme patterns and that is what the random test was testing.

According to the Iowa Test of Basic Skills for Spelling, Table VII shows the following data for the pre-test of September 24, 1968 and the post-test for April 22, 1969 for the EG and CG. The median shows .5 of a grade level gain more by the CG than by the EG. The mean of the raw scores is 8.51 points higher for the CG than the EG.

TABLE VII  
IOWA TEST OF BASIC SKILLS FOR SPELLING  
SHOWING Md AND M FOR EG AND CG

	EG		CG	
	Median	Raw Score Mean	Median	Raw Score Mean
Pre-test	4.5	46.71	3.7	39.78
Post-test	<u>5.3</u>	<u>55.80</u>	<u>5.0</u>	<u>56.58</u>
Gains	.8	8.29	1.3	16.80

Another significant finding of this study was the fact that ten EG students completed the usual 36 lessons for grade five and during the second semester they worked in pairs:

Team I learned 840 additional words  
 Team II learned 280 additional words  
 Team III learned 60 additional words  
 Team IV learned 380 additional words  
 Team V learned 208 additional words

These teams made their own scripts to put on cartridges for their personal study at the cassette. Each team was furnished a cartridge to use. They took each other's lessons from the cartridge. Team I was spelling words at the tenth grade level at the end of the study.

The slower ten EG students completed fifteen lessons during the second semester, using the Flash-X and tape recorder for study and then for testing. The outstanding observation with these children is that they were anxious to complete each

lesson and did so with success. They no longer found spelling boring to them, but accepted responsibility for their own progress.

### III. FINDINGS FOR THE SECOND HYPOTHESIS

Is there any significant observation between reading and spelling achievement when the tape recorder is used for spelling as compared to the commercial textbook weekly lessons?

The North Central Kansas Educational Resource Center administered the SRA Achievement Tests on November 21, 1968 which date perhaps will not give as pure a result so far as spelling is concerned but the results are presented in Table VIII to help the second hypothesis as well as to show spelling progress by April 9, 1968 when the second SRA Achievement test was administered.

In Table VIII the median grade levels for the November, 1968 and the April, 1969 tests in spelling, vocabulary, and reading comprehension are shown for EG and CG. The EG shows the strongest gain in vocabulary and in reading comprehension. In vocabulary EG shows a gain of 0.7 and CG shows a loss of 0.5 which gives 1.2 grade level gain for the EG over the CG. In reading comprehension EG shows a gain of 1.2 and CG shows a loss of 0.3 which gives EG a grade level gain of 1.5 over CG. Since other materials than the spelling

procedures were kept the same in both rooms, these observations are significant. The reading texts, supplementary materials, and the SRA Lab IIB, were used the same in both rooms.

TABLE VIII  
SRA ACHIEVEMENT TESTS IN SPELLING, VOCABULARY  
AND READING COMPREHENSION

Spelling		Vocabulary		Reading Comprehension	
EG	CG	EG	CG	EG	CG
11-21-68 Grade Equivalents:					
Md 5.3	Md 4.8	Md 5.4	Md 5.9	Md 5.2	Md 5.6
4-9-69					
Md $\frac{6.5}{1.2}$	Md $\frac{5.9}{1.1}$	Md $\frac{6.1}{0.7}$	Md $\frac{5.4}{-0.5}$	Md $\frac{6.4}{1.2}$	Md $\frac{5.3}{-0.3}$
11-21-68 Raw Scores:					
M 58.54	M 66.42	M 54.90	M 67.39	M 57.03	M 63.06
4-9-69					
M $\frac{70.62}{12.08}$	M $\frac{69.03}{2.61}$	M $\frac{62.03}{7.13}$	M $\frac{61.00}{-6.39}$	M $\frac{61.93}{4.90}$	M $\frac{55.71}{-7.35}$

Beneath the broken line in Table VIII are the medians for the two testing periods in spelling, vocabulary, and reading comprehension for EG and CG. The biggest gains are in vocabulary with 13.52 and in reading comprehension with 12.25 points for EG over CG.

Since both rooms were equal as nearly as possible so far as mental aptitude was concerned, it would seem appropriate to compare the medians and the means of the Stanford Achieve-

ment Test for spelling, vocabulary, and paragraph meaning as determined February 2, 1969. This comparison is shown in Table IX below:

TABLE IX  
MEDIAN AND MEANS FROM THE STANFORD ACHIEVEMENT  
TESTS IN SPELLING, VOCABULARY, AND  
PARAGRAPH MEANING

	Spelling		Vocabulary		Paragraph Meaning	
	EG	CG	EG	CG	EG	CG
Md	5.4	4.5	5.4	5.2	5.9	5.4 grade level
M	55.16	50.71	55.81	55.52	59.90	57.13 raw scores

According to the Stanford Achievement Tests there was quite a spread between EG and CG in spelling -- a 0.9 grade level for EG over CG; in vocabulary EG showed only 0.2 grade level above CG; and in paragraph meaning EG had 0.5 grade level above CG. The differences in the means favor EG: In spelling 4.46 points, in vocabulary 0.29 points, and in paragraph meaning 2.77 points.

To summarize findings for the standardized tests which were given, the experimenter finds some contradiction in spelling scores. The Iowa Test of Basic Skills in Spelling showed .5 grade level gain for CG over EG. The SRA spelling comparison during four months from November to April showed .1 grade level

favoring EG, but the Stanford Achievement Test for spelling showed a grade level of .9 in favor of EG, at the time of testing in February.

In the reading achievement tests there seems to be greater substantiation to favor EG in both vocabulary and comprehension for the SRA tests and the Stanford Achievement tests. Vocabulary grade level gain for EG over CG on SRA tests was 1.2 and on Stanford Achievement tests EG was favored with a .2 grade level difference at the time of testing in February. The comprehension tests showed grade level gain for EG over CG on SRA was 1.5 for four months and on the Stanford test in February there was a .5 grade level difference on the median.

In only one test did CG grade level median show greater gain than EG. The results of the tests would seem to indicate more pronounced achievement for EG over CG in reading than in spelling on standardized tests.

## CHAPTER V

### SUMMARY AND CONCLUSIONS

At the outset of this study in September, 1968 it was the purpose of the study to make an assessment of the value of making spelling self-pacing by putting lessons on magnetic tape, to allow for individual differences in spelling performance, to use the discovery method within the linguistic approach to teaching spelling, to provide a method of studying spelling for the slow learner, to give the accelerated child opportunity for enrichment and challenge in the area of spelling performance, and to make observations concerning spelling and reading achievement.

It was determined to conduct action research in which there would be 32 fifth graders in a control group and 32 fifth graders in the experimental group from two intact classrooms from low socio-economic levels.

The experimental group would use the tape recorder and lessons on magnetic tape to pace themselves according to their ability, progressing as each lesson was perfected. The control group would use the usual weekly lessons in which the teacher pronounced the words. In both rooms the materials for reading were the same.

#### I. MAJOR CONCLUSIONS FOR THE FIRST HYPOTHESIS

1. The individualized approach is responsible for as much student progress as is the weekly whole-class approach

in most tested cases, and in some instances it is responsible for significantly more progress.

2. The accelerated students have enriched their vocabulary by adding many more words than the students in the whole-class group, since the latter are lock-stepped to the class pace.

3. The slow learner likes to study under the direction of tape where there can be no distractions for him. This probably accounts for some of his success.

## II. MAJOR CONCLUSIONS FOR THE SECOND HYPOTHESIS

1. The individualized approach in spelling may have contributed to as much improvement in reading achievement (both vocabulary and comprehension) as is the whole-class approach in spelling in all tested cases, and in some instances may be responsible for considerably more improvement in vocabulary and in paragraph meaning as shown by Table VIII on page 40 and Table IX on page 41.

2. By as much repetition as the child needs to master a structural pattern or a phoneme-grapheme construction, he gains the needed help for word attack and understanding in reading. If he knows the lesson, he does not have to sit through repetitions given by the teacher in the whole-class approach.



3. Both vocabulary and paragraph meaning improved when spelling was presented by the individualized approach on the tape recorder.

### III. IMPLICATIONS CONCERNING THE STUDY

1. It is the belief of the experimenter that much greater improvement would take place if the experimental group were placed at spelling levels at which they could work efficiently by an inventory test at the beginning of the year. The accelerated students were "spinning their wheels" until they caught up with the level at which they should achieve. The slow students were working at a level too high for them to achieve success and so disliked spelling.

2. An independent form of study whereby accelerated teams make their own spelling tapes is highly motivating to them and they seem to enjoy it.

3. Whenever pupils pace themselves on tape, the class no longer needs grades (A,B,C,D) and the teacher needs only to keep a progress record and talk with each child at various times about his progress. Parents were quite willing to accept this type of report telling how far the child had progressed in his spelling lessons.

4. A child can be trained to take a turn at setting up the tapes for spelling according to the schedule sheet. Responsibility for machines and fairness with schedules are soon learned by the child technician.

For too many years this experimenter has seen the inefficiency of teaching spelling and reading, with only a fraction of the class receiving the benefit of instruction, to ever return to the whole-class approach. Media will assist the teacher in providing a climate in her class in which each child can succeed at his pace and at his level; a climate in which learning takes place for everyone and the teacher becomes the guide and counselor.

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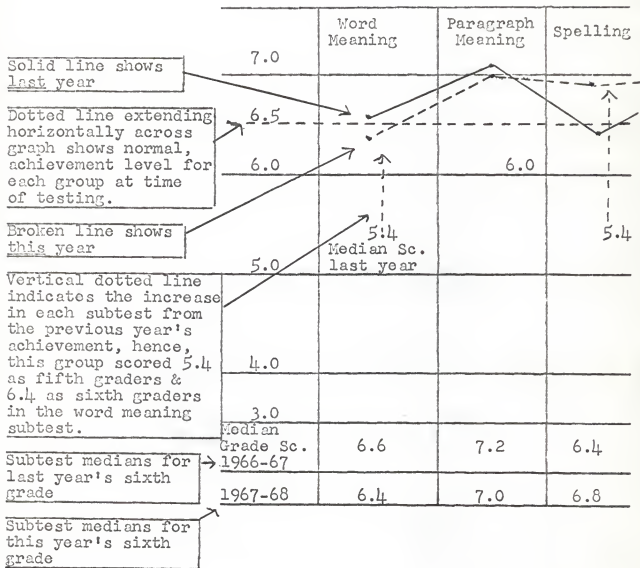
## APPENDIX A

April 30, 1968

To: Teachers (K-8) in Unified School District #333  
From: Paul H. Koehn, Assistant Superintendent  
Subject: Stanford Achievement Test results

The attached graphs show some data derived from the results of the Stanford Achievement Test. The graphs for each grade were made by using achievement scores of pupils from all of the attendance centers in our district. Median grade scores of the subtests for each grade have been used. Some comparisons have been made by utilizing median scores from the 1966-67 school year and the 1967-68 school year.

A portion of the sixth grade graph is reproduced below with accompanying explanatory notes to assist in interpreting the graphs for each grade.



## STANFORD ACHIEVEMENT TEST

## PRIMARY I BATTERY

## Grade 1

## Grade Placement 1.5

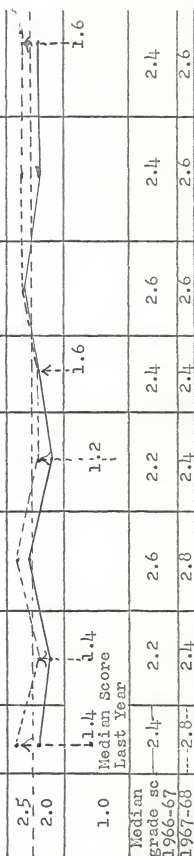
Grade Scores	Word Reading	Paragraph Meaning	Vocabulary	Spelling	Word Study Skills	Arithmetic
8.0						
7.0						
6.0						
5.0						
4.0						
3.0						
2.0						
1.5						
1.0						
1.0						
Median Grade Sc. 1966-67	1.4	1.4	1.6	1.2	1.6	1.6
1967-68	1.6	1.4	1.8	1.6	1.8	1.8



## STANFORD ACHIEVEMENT TEST

## PRIMARY II BATTERY

Grade Score	Grade II					Grade Placement 2.5			
	Word Meaning	Para-graph Meaning	Science & Social Studies Concepts	Spelling	Word Study Skills	Language	Arithmetic Computation	Arithmetic	
8.0									
7.0									
6.0									
5.0									
4.0									
3.0									
2.5									
2.0									
1.0									
Median grade sc 1966-67	2.4	2.2	2.6	2.2	2.4	2.6	2.4	2.4	
1967-68	2.4	2.4	2.8	2.4	2.4	2.6	2.6	2.6	



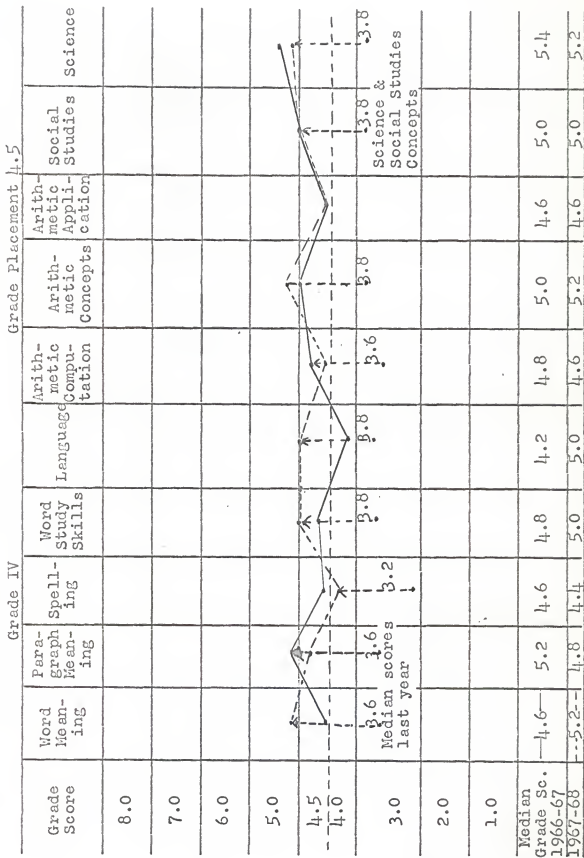
## STANFORD ACHIEVEMENT TEST

## PRIMARY II BATTERY

Grade Scores	Grade III					Grade Placement 3.5		
	Word Meaning	Para-graph Meaning	Science & Social Studies Concepts	Spelling	Word Study Skills	Language	Arithmetic Computation	Arithmetic Concepts
8.0								
7.0								
6.0								
5.0								
4.0								
3.5 3.0 2.0 1.0	2.4 2.4 2.4 2.4	2.2 2.2 2.2 2.2	2.6 2.6 2.6 2.6	2.2 2.2 2.2 2.2	2.4 2.4 2.4 2.4	2.6 2.6 2.6 2.6	2.4 2.4 2.4 2.4	2.4 2.4 2.4 2.4
Median Grade Score	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
1966-67	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
1967-68	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4

## STANFORD ACHIEVEMENT TEST

## INTERMEDIATE I BATTERY



## STANFORD ACHIEVEMENT TEST

## INTERMEDIATE II BATTERY

## Grade V

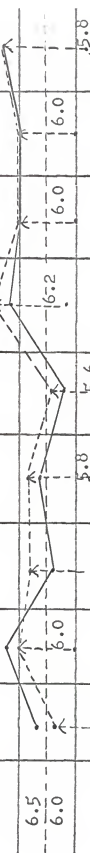
## Grade Placement 5.5

Grade Scores	Word Meaning	Paragraph Meaning	Spelling	Language	Arithmetic Computation	Arithmetic Concepts	Arithmetic Application	Social Studies	Science
10.0									
9.0									
8.0									
7.0									
6.0									
5.5									
5.0									
4.0									
3.0									
Median Grade Sc. 1966-67	5.4	6.0	5.4	5.8	5.6	6.2	6.0	6.0	5.8
1967-68	5.4	5.8	5.4	5.6	5.2	6.0	5.4	5.8	6.0

STANFORD ACHIEVEMENT TEST

INTERMEDIATE II BATTERY

Grade Score	Grade VI					Grade Placement 6.5				
	Word Meaning	Paragraph Meaning	Spelling	Language	Arithmetic Computation	Arithmetic Concepts	Arithmetic Application	Social Studies	Science	
10.0										
9.0										
8.0										
7.0										
6.5										
6.0										
5.0										
4.0										
3.0										
Median Grade Sc. 1966-67	6.6	7.2	6.4	6.6	6.2	7.2	7.0	7.0	7.4	
1967-68	6.1	7.0	6.8	6.8	6.4	7.6	7.0	7.0	7.4	



## STANFORD ACHIEVEMENT TEST

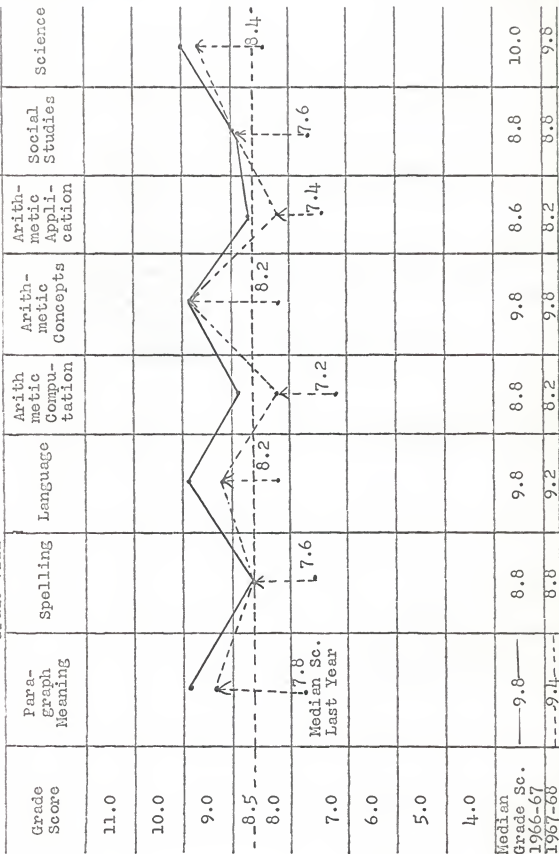
## ADVANCED BATTERY

Grade VII

Grade Placement 7.5

Grade Score	Para-graph Meaning	Spelling	Language	Arith-metic Compu-tation	Arith-metic Concepts	Arith-metic Appli-cation	Social Studies	Science
11.0								
10.0								
9.0								
8.0								
7.5								
7.0	7.2	6.4	6.6	6.2	7.2	7.0	7.0	7.4
6.0	Median Sc. Last Year							
5.0								
4.0								
Median Grade Sc. 1966-67	7.8	7.6	8.2	7.2	8.2	7.4	7.6	8.4
1967-68	7.6	7.8	7.8	8.2	8.2	7.8	7.8	8.0

STANFORD ACHIEVEMENT TEST  
Grade VIII  
ADVANCED BATTERY  
Grade Placement 8.5



## APPENDIX B

## CHARACTERISTICS OF INDIVIDUALIZED INSTRUCTIONAL PROGRAMS

1. Students do not leave one unit and begin a new one until they have attained a predetermined level of proficiency in the former unit.
2. Students must be allowed varying amounts of time (and practice) to achieve mastery of specific instructional goals.
3. Permitting students to proceed at varying rates necessitates provision for frequent and diagnostically oriented evaluation of each student's progress.
4. The teacher's role changes from being primarily one of disseminating information to one of (1) diagnosing pupil needs, (2) planning and preparing each child's instructional program, (3) working with pupils in small groups or individually and (4) supervising teacher clerks, teacher aides and junior or less experienced teachers.
5. Students become more actively involved in the learning process than before by assuming more responsibility for their own development.
6. Almost every child becomes a teacher part of the time.
7. Classrooms must be arranged differently in a physical sense.
8. We must begin to apply a "systems analysis" approach to schools as learning centers.

## A RATIONALE FOR INDIVIDUALIZING INSTRUCTION

1. The 2/3's rule
2. The need to move
3. Reaction time
4. Intra-individual differences
5. Destruction of self-esteem



It is likely that if enough different tests were used, almost all children would be found superior in at least some area measured by the tests.

Benjamin S. Bloom

## APPENDIX C

## ALPHABETICAL WORD LIST

This basic word list totals 544 words which are a foundation from which many other words can be learned. They are the basic spelling words appearing in the thirty unit lessons.

ability	basement	circle	eighteen
above	bathe	clothing	eighth
absent	beach	clover	eighty
ache	beads	clown	either
acting	beans	Co.	empty
activity	beauty	colony (ies)	engine
adventure	became	comfort	enter
advertisement	become	complete	entertainment
against	beet	congress	escape
age	begging	contain	especially
agreement	belt	contest	etc.
ahead	bending	cool	evergreen
allow	berry	copy	example
almost	Bible	cord	excellent
alone	blanket	cottage	except
although	boil	couple	exchange
A.M. (a.m.)	brake	crawl	excite
among	breath	crow	excitement
amusement	broadcast	curl	exclaim
angel	bubble	dairies	excuse
announcement	bump	dairy	exercise
anxious	bundle	damage	expect
apartment	bury (ies)	danger	expel
arrive	calm	daughter	expense
art	careful	deny (ies)	explain
artist	cart	department	explode
assortment	case	development	explore
attack	celebrate	different	export
attend	cell	dime	express
auditorium	cellar	dine (ing)	extra
automobile	center	distance	faithful
autumn	central	dive (ing)	farther
avenue (Ave.)	certain	divide	favorite
awful	chalk	Dr.	fearing
bake (ing)	chance	drilling	felt
balloon	change	drove	figure
band	chest	drum	file (ing)
bandage	choir	dye	finish
bang	choose	eagle	flat
bank	chores	earn	float
bar	chorus	echo	folks

fool	industry (ies)	murder	pleasant
forehead	injury (ies)	nail	pleasure
forest	ink	navy (ies)	P.M. (p.m.)
fork	instrument	necktie	point
form	intend	neighbor	polish
forth	invent	neither	possible
forty	invite	niece	post
forward	island	nineteen	power
fought	jar	ninety	practice
fourteen	jaw	ninth	prepare
fox	join	No. (no.)	president
freeze	joke (ing)	noon	prevent
froze	kettle	nor	price
fruit	kite	notice	prince
ft.	knife	oak	princess
gal.	knight	oats	printing
gate	knit	object	prize
general	knob	office	probably
germ	lantern	officer	program
ghost	law	open	promise
gloves	lawn	order	promote
government	lb.	otherwise	property
grabbing	leap	ought	protect
graceful	least	ourselves	provide
grate	level	outfit	P.S.
grateful	liberty (ies)	oz.	pt.
grow	lie	package	pumping
grocery (ies)	list	page	purple
group	locate	paid	puzzle
guard	loose	palm	qt.
guide	lose	pants	quart
harm	losing	parade	quarter
harness	magic	parents	queer
harvest	main	path	question
hate (ing)	map	paw	quiet
heat	mark	peaceful	quilt
heating	market	peanuts	quit
heel	matching	pear	ranch
helpful	matter	peas	rang
herd	meal	perfume	range
hike	meant	perhaps	rattle
honest	memory (ies)	person	raw
honey	metal	pickle	reason
honor	midnight	pile	record
horn	mighty	pine	refuse
hospital	mind	pink	regard
hymn	mistake	pipe	region
icy	model	planning	rein
imagine	modern	plate	release
improvement	moment	playful	remark
in.	movie	playmate	removed

repeat	sixty	thirteen
resign	size	thirty
retire	ski	thousand
rifle	slave	throat
roasting	slid	throne
rod	smart	tin
rotate	soft	tools
rough	soil	tore
rubber	sort	touch
rule	soup	toward
rush	sour	travel
saddle	southern	treat
safe	space	treatment
safety	speak	treaty
salad	special	trimming
salesman	speech	trouble
sample	spinning	trunk
satisfy (ies)	splitting	tunnel
scent	spoke	twice
scoreboard	sport	twins
scout	spread	typewriter
scream	sprinkle	understand
screw	spy (ies)	unless
secretary (ies)	St.	valley
select	stalk	voice
sense	stamp	wade (ing)
sentence	stare	watermelon
separate	state	wave (ing)
serve	statement	weather
settlement	stir	welcome
seven	strait	whether
seventeen	strange	whisper
seventh	streetcar	whistle
seventy	strike (ing)	wide
several	subject	wild
shade	sugar	windshield
sharp	sunshine	winning
shelter	supply (ies)	wipe (ing)
shout	tank	wire (ing)
shovel	television	wise
shower	tent	word
shut	term	worry (ies)
sign	terrible	worse
silver	test	wring
simple	thankful	wrist
sir	thaw	yd.
sixteen	theater	yet
sixth	thirsty	

## APPENDIX D

## POWER VOCABULARY

Here are 214 additional words added to the basic word list usually by making structural changes or substituting other vowels or other beginning or ending consonants.

abilities	differ	instruct	ranches
active	dirt	kites	reach
activities	dividing	lean	removed
anger	Doctor	leaps (ed)	returned
anxiously	drill	link	reviewed
arm	drink	locating	riddle
beaches	each	man	ring
beast	earned	meaner (est)	rink
beat	elected	member	ripe
beauties	exchanged	men	roast
becoming	excited	might	roughly
blank	exciting	mink	safer (est)
bleach	excused (ing)	Monday (Mon.)	safeties
blew	expected	necklace	sake
blow	exploded	neighborly	sale
boiler	explored	nineties	sank
bottles	favor	number	Saturday (Sat.)
brain	feast	oil	screams (ed)
brave	few	opened	season
bunches	fifth	ounce	selected
burned	figured	outdoors	sell
busy	finished	pair	separately
cattle	foot	parading	separating
cave	for	pare	seventies
cents	forget	part	shake
charm	forks	pickles	shame
chart	formed	pin	shape
cheer	fort	pink	show
chew	fourth	pint	sink
chick	fox	pipes	sixties
chill (ing)	Friday (Fri.)	plates	sled
choice	fallen	pleasantly	sneeze (ing)
choke (ing)	fates	pointer	sorted
clean (ing)	gave	polished	south
clean (er, est)	goodnight	postscript	spank
company	great	pound	specially
copied	guilt	preach	speeches
cords	heal	promised	spill (ing)
crew	heard	properties	spoil
curled	him	protected	sprain
depart	horns	rain	stair

start  
stew  
string  
stripe  
stump  
Sunday (Sun.)  
sunrise  
teach  
ten  
thank  
themselves  
think

third  
thirst  
thirstiness  
threw  
throw  
thrown  
Thursday  
train  
treaties  
treating  
treats (ed)  
Tuesday

turtle  
twenties  
twinkle  
valleys  
warm  
Wednesday  
weigh  
whistles  
wider (est)  
windmill  
wink  
yard

## APPENDIX E

## MORE WORDS FOR GOOD SPELLERS

These words are grouped according to subject matter topics. In addition to the 207 words in these groups, 89 others are learned in the exercises.

abbreviation	clef	fuselage	mainland
abdomen	climate	giraffe	manager
acid	coach	grain	manufacturing
adjectives	cockpit	grazing	Marquette,
adult	cocoon	Greenwich	Jacques
adverb	coffee	gridiron	Mars
aileron	comedy	gross (gro.)	McCormick,
alto	commercial	halfback	Cyrus
antenna	conductor	height (ht.)	Mercury
antennae	consonant	helicopter	mercutey
antonym	contraction	Henry,	meridian
apostrophe	conversation	Patrick	mesa
atlas	copper	hippopotamus	milling
average	corral	holster	minerals
Balboa,	courtesy	homonym	mining
Vasca de	cumulus	humidity	Morse,
bass	current	hymn	Samuel
battery	dairying	import	mystery
Bell, Alexander	denominator	index	negative
Graham	De Soto,	insulate	Neptune
bibliography	Hernando	iodine	nimbus
bleachers	diamond	isthmus	numerator
Boone, Daniel	digraph	Jefferson,	nymph
broadcast	double	Thomas	outline
bronco	dozen (doz.)	Joliet, Louis	oxygen
butte	dramatize	Jupiter	parallel
canyon	Earth	lariat	penguin
cape	Edison,	larva	peninsula
carbon	Thomas	larvae	Penn,
dioxide	electromagnet	La Salle,	William
card catalog	encyclopedia	Rene	perimeter
Carver,	entry word	latitude	plateau
George W.	experiment	leopard	plural
cell	export	Lewis,	Pluto
channel	filament	Meriwether	positive
choir	football	Lincoln,	possessive
chorus	fraction	Abraham	prairie
circuit	Franklin,	linebacker	predicate
cirrus	Benjamin	liquid	prefix
citrus	Fulton,	livestock	prime
Clark,	Robert	longitude	propeller
William	fuse	lumbering	pueblo

punt  
 pupa  
 pupao  
 quarterback  
 radio  
 rainfall  
 rd.  
 rectangle  
 referee  
 Rovero,  
     Paul  
 rhinoceros  
 rodeo  
 rudder  
 Saturn  
 serial  
 shipbuilding  
 shortstop  
 single

singular  
 solid  
 solo  
 soprano  
 spice  
 square  
 stampede  
 stirrups  
 stockyards  
 strait  
 stratus  
 subject  
 suffix  
 sugar  
 synonym  
 tackle  
 tariff  
 telecast  
 television

textiles  
 thorax  
 tobacco  
 topic  
 touchdown  
 treble  
 triangle  
 tributaries  
 triple  
 umpire  
 Uranus  
 usage  
 Venus  
 volts  
 bowel  
 walrus  
 Washington,  
     George  
 whaling



## APPENDIX F

## 366 OTHER WORDS ADDED TO POWER VOCABULARY

able	card	discovered	grandma
afterwards	carry	disease	gray
airport	cause	doesn't	greatest
aisle	cement	dollars	gums
alligator	certainly	double	gymnasium
all right	chain	drank	hadn't
ants	cherry	dream	Halloween
appreciate	child	dressed	hasn't
apron	chimney	drive	haven't
aren't	chocolate	dug	hello
army	chosen	dust	hero
Ave.	cities	east	he's
awake	classmate	Easter	hiding
awfully	clay	edge	higher
awhile	clear	electric	high school
awoke	climate	else	history
babies	climb	envelope	hollow
barrel	coal	eve	hoping
basketball	cocoa	everybody	hotel
bath	collar	everyone	huge
battle	college	fallen	hung
bedroom	colonies	examinations	hurried
begin	comb	famous	hurry
begun	common	Feb.	hurt
behind	contest	fence	I'd
being	cook	fifteen	idea
believe	copper	fireworks	inside
below	corner	fit	inside
biggest	costumes	flew	isn't
bike	cotton	flies	it's
bite	course	floor	jail
blind	creek	forgot	Jan.
bones	cried	forgotten	keen
bottom	cries	fresh	king
broken	crowd	frightened	knees
brush	curly	gang	knives
bucket	curtains	garage	ladder
business	dearest	gasoline	laid
busy	Dec.	geography	language
button	deep	giving	larger
cabbage	desert	glass	largely
cafeteria	diamonds	God	lay
cage	dime	gotten	leader
calf	dining	grain	leaf
captured	dirty	grandfather	leaving

less	oldest	salt	sweet
lessons	outline	salute	swell
lettuce	own	sample	system
life	pageant	Sat.	taken
lift	pail	saved	taking
limb	palace	scarf	talk
lived	parties	schoolroom	tardy
load	paste	scooter	taste
lonesome	pay	score	tear
longer	perfect	scratch	teeth
loved	piano	seeds	telephone
lovingly	picnic	Sept.	theft
magazine	plane	setting	therefore
maple	planned	settled	there's
Mar.	planning	shadow	they're
marbles	plantation	shell	those
material	players	shepherds	though
maybe	playhouse	shining	thus
measles	pole	shirt	tight
medicine	pool	shopping	tomorrow
meet	porch	shore	trail
merry-go-round	posters	shoulder	training
method	postman	sight	truck
mice	post office	since	underneath
middle	potatoes	sincerely	unexpected
miner	powder	skiing	upstairs
minute	prison	skinned	usually
mischievous	problem	sky	valentines
monkey	proud	slippers	war
motor	pupils	slipping	wasn't
moved	railroad	solid	weeds
moving	raise	someone	west
museum	real	sooner	what's
music	really	spade	wheat
narrow	receive	spoon	whip
natives	received	squirrel	whipped
nature	rented	star	whole
nearly	replied	stole	whom
Negro	report	stomach	woman
newspapers	rich	stone	wonder
north	rise	stream	wouldn't
note	roses	sudden	written
nothing	route	suddenly	wrong
Nov.	row	suppose	wrote
nurse	rules	surely	you'll
ocean	sail	surprise	you're
Oct.	sailors		

## APPENDIX G

## PRE-TEST IN SPELLING FOR GRADE FIVE

## A. Application of consonant sounds

shut	Please shut the door. (shut)
chest	Take a chest X-ray. (chest)
ranch	Cowboys were working at the ranch. (ranch)
rang	The bell rang at noon. (rang)
whisper	Did you whisper? (whisper)
rush	They made a rush for the door. (rush)
those	Those beads are pearls. (those)
fresh	The flowers are fresh. (fresh)
string	The beads are on a string. (string)
method	Did you use the right method? (method)

## B. Application of Vowel sounds

## Short Vowels -

list	This is a list of words. (list)
map	Where is Concordia on the map? (map)
stamp	Use a new postage stamp. (stamp)
test	Did you pass the test? (test)
shell	What a pretty sea shell! (shell)
twins	Where did the twins live? (twins)
job	The job was not easy. (job)
God	Christians worship God. (God)
bump	There is a bump in the road. (bump)
hung	Mother hung the clothes to dry. (hung)

## Long Vowels -

oak	The oak tree was the post office. (oak)
load	They hauled a load of lumber. (load)
leap	Do you play leap frog? (leap)
least	At least they were trying. (least)
paid	How much were you paid? (paid)
lie	He told a lie. (lie)
save	She will save her money. (save)
size	He wears size twelve clothes. (size)
spoke	Everyone spoke politely. (spoke)
bolts	We need quarter-inch bolts. (bolts)
rules	The principal gave us the rules. (rules)

## More Vowel Sounds -

shout	With a shout they went to play. (shout)
sour	The milk is sour. (sour)
loose	The pony got loose. (loose)
stood	This is where she stood. (stood)
shower	It is cool after the shower. (shower)
show	What did you show at the fair? (show)
enjoy	We enjoy beautiful pictures. (enjoy)
spoil	Do not spoil our enjoyment. (spoil)
clown	The clown is a funny fellow. (clown)

## Irregular Vowel spellings -

field	We saw a field of wheat. (field)
earth	The earth is a planet. (earth)

lose           Where did you lose your gloves? (lose)

fruit          The fruit is ripe. (fruit)

#### Other Vowel Spellings -

mark          Do not mark in the new book. (mark)

paw           The cat put its paw in the milk. (paw)

scarf         She lost her scarf in the wind. (scarf)

war           We hope the war is soon ended. (war)

#### Vowels before r -

term          We can spell better this term than last.

(term)

porch         Grandmother rocked on the porch. (porch)

hurt          The bunny had hurt its paw. (hurt)

curl          She has a natural curl in her hair. (curl)

sir           Yes, sir, I have my lessons done. (sir)

perfect       That is a perfect score. (perfect)

worse         His accident was worse than mine. (worse)

### C. Structural Analysis

#### Compound Words -

otherwise     Otherwise we shall not go. (otherwise)

playhouse    Let us build a playhouse. (playhouse)

fireworks    Fireworks are noisy fun. (fireworks)

watermelon   The watermelon is sweet. (watermelon)

midnight     Cinderella went home at midnight. (midnight)

#### Prefixes -

expect       Whom did you expect? (expect)

unexpected   Company is unexpected today. (unexpected)

unlucky      Is it your unlucky day? (unlucky)

underneath   Underneath the bed was a hiding place.  
                 (underneath)

explain      Can you explain the problem? (explain)

Suffixes -

department	In which department did you buy it?
	(department)
education	Education is our business. (education)
business	My father was a business man. (business)
dearer	Her old doll is dearer than the new one.
	(dearer)
greatest	Who is the greatest man in history? (great- est)
discovered	Who discovered America? (discovered)
lonesome	The little child was lonesome. (lonesome)
beauty	The beauty of the landscape is unsurpassed.
	(beauty)
thankful	We are thankful for our freedoms. (thankful)
surely	Surely they will come soon. (surely)

Plurals -

armies	The armies have moved into new territory. (armies)
colonies	The thirteen colonies were courageous. (colonies)
dairies	Dairies supply our people with milk. (dairies)

groceries Groceries are a big budget item. (groceries)  
 berries The berries were ripe. (berries)

Capitals (abbreviations) -

Jan. Jan. 1 is New Year's Day. (Jan.)  
 A.M. School begins at 8:45 A.M. (A.M., a.m.)  
 Ave. First Ave., Concordia, Kansas (Ave.)  
 Dr. Dr. Scott lives in Belleville. (Dr.)  
 gal. 1 gal. of vinegar (gal.)  
 Feb. Feb. 14th is Valentine's Day. (Feb.)  
 Nov. Nov. 11 is Veteran's Day. (Nov.)  
 Sept. Sept. 17th is Constitution Day. (Sept.)  
 Oct. Oct. 31st is Halloween. (Oct.)  
 Mon. Mon. the 3rd is a school day. (Mon.)

Unexpected Spellings -

niece She is my niece. (niece)  
 pleasant What a pleasant day! (pleasant)  
 enough Have you had about enough? (enough)  
 especially These are especially hard to spell.  
 (especially)  
 southern The southern states seceded. (southern)  
 weather The weather is fair. (weather)  
 auditorium The auditorium was crowded. (auditorium)  
 arithmetic Boys like arithmetic. (arithmetic)  
 guard The guard surrounds the White House. (guard)  
 neighbor Be a good neighbor. (neighbor)

## APPENDIX H

EXAMPLE OF THE LINGUISTIC  
APPROACH WITH INDUCTIVE REASONING  
FOR A SPELLING LESSON ON THE TAPE RECORDER

UNIT FIVE  
More Vowel Spellings

This is Randy Rulescouter asking you to look for some more vowel spellings in Unit Five. After studying this unit you have found another way to spell the long o sound. Listen to "crow" --- Say it. --- It sounds like "c-r-o", doesn't it? But it is spelled c-r-o-w.

Now "ow" has another sound. What is the sound in "how"? --- That's right -ow. Now say house ---. What other letters have the sound of ow in "how"? --- That's right, "ou". So you will have to memorize certain words to know whether the sound is spelled "ow" or "ou".

Now oo is sometimes long (u) --- and sometimes short oo (u)s ---. Make the long sound after me oo --- and the short sound oo ---, that's right. Tell me which oo sound is it you hear in "noon", "cool", and "fool" ---. Yes, the long sound. Listen to "stood", "wood", and "hood" and tell me which sound you hear ---. Surely, the short oo sound.

Now there are two more vowel twins for sounding alike as you heard in ow and ou. Listen to "enjoy". Say it. --- What is the ending sound? --- Yes, "oy". Listen to "oil", "boil", "soil", and "join". What vowel sound is the same? --- It sounds the same as "oy", but what is it? --- Yes, "oi". See, they are twins!

The handwriting hint that Randy wants to tell you about is that ou, ow, oy, and oi all have an o which must be closed at the top and you do not come down to the base line when you connect to the u, w, y, or i. If you did, that would make the o look like an a, wouldn't it. So watch out!

Now we are ready to write these 20 words you have studied:

1. shout - Did you hear a shout across the river? shout
2. scout - A scout does a good deed each day. scout
3. crow - It is thirteen miles across the canyon as the crow flies. crow
4. sour - "Those grapes are sour," said the old fox. sour
5. clown - Everyone loves to watch a circus clown. clown
6. power - Gasoline gives the engine great power. power



7. shower - After the shower the air is cool. shower
8. cool - The refrigerator keeps the food cool. cool
9. fool - The king's jester was not really a fool. fool  
(Hear the oo sound?)
10. noon - At noon we ate our lunch. noon (What is the sound?)
11. tools - The carpenter takes good care of his tools. tools
12. loose - A cape is a loose garment. loose
13. join - Did you join the Camp Fire Girls? join
14. boil - Water will boil at 212 degrees F. boil
15. soil - The farmer prepares the soil for planting wheat.  
soil
16. voice - The Voice of America is heard in East Germany.  
voice
17. point - The point of the knife is sharp. point
18. follow - Many people follow a good leader. follow
19. stood - We stood and watched the sunset. stood
20. enjoy - Everyone will enjoy the short vacation! enjoy

Now let me check quickly with you to be sure you have all the words --- (Check just the 20-word list)

Next we will see how well we put our spelling power to use on the power vocabulary: Number to 28 . . . . .

1. choice - My choice is lemon pie. choice
2. pointer - Use the pointer at the chalk board. pointer
3. boiler - Mother has a double boiler in which she cooks.  
boiler
4. blow - Blow out every candle on the cake! blow
5. show - Was it a good show? show
6. throw - He can throw the ball very well. throw
7. oil - Put oil in the engine. oil
8. spoil - Food will often spoil when it is warm. spoil
9. below - The temperature was 100 degrees below zero at the  
South Pole. below
10. hollow - The rabbit hid himself in a hollow log. hollow
11. narrow - The bridge was too narrow for two cars at a  
time. narrow
12. own - This is my own pen. own
13. shadow - Did you see your shadow in the moonlight? shadow
14. row - We planted a row of lettuce. row
15. tomorrow - Tomorrow is Saturday. tomorrow
16. crowd - The crowd went to the fair. crowd
17. powder - Powder makes the gun fire. powder
18. proud - Are you proud of your handwriting? proud
19. route - The by-pass will route you around the city. route
20. cook - Do you cook outside sometimes? cook
21. floor - The floor was made of tile. floor
22. pool - Swim in the pool where it is safe. pool
23. scooter - It is fun to play on a scooter! scooter

- 24. sooner - You will learn your words sooner this way. sooner
- 25. spoon - Early man used a wooden spoon. spoon

Now we will take three review words to see how well you remember:

- 26. verb - The verb tells something about the subject. verb
- 27. object - Usually the object follows the verb. object
- 28. rural - We live in a rural area. rural

Now let me check these 28 words with you quickly ---

Now we are ready to challenge the good spellers with six words that are found in a grammar lesson:

- 1. adverb - An adverb tells how, when, where, or why. adverb
- 2. adjective - An adjective tells which one, what kind of, and how many. adjective
- 3. subject - The subject tells what the sentence is about. subject
- 4. predicate - The predicate tells about the subject. predicate
- 5. singular - A singular noun means only one. singular
- 6. plural - Plural means more than one. plural

Now we will check over these quickly ---

Next we will take your sentences by dictation. Listen carefully, so you can write them all:

- 1. We enjoyed watching the clown make a fool of himself.
- 2. Father pointed and shouted in a loud voice for us to follow him.
- 3. That shower at noon cooled us off and made the soil loose and soft.
- 4. One crow acted as a scout and called the others to join him.
- 5. We stood there and watched the new power tools in the shop.
- 6. The milk was sour and we had to boil our drinking water.

The twenty words in the basic study list are included in these sentences in order to give a functional practice in writing the words and put them out of isolation.

## APPENDIX I

EXAMPLE OF THE LINGUISTIC  
APPROACH WITH INDUCTIVE REASONING  
FOR A SPELLING LESSON ON THE TAPE RECORDERLESSON NINETEEN  
Spelling the g sounds

Boys and girls, this is Randy Rulescouter looking at Lesson 19 with you for some help with spelling the g sounds. Make the hard g sound, --- g. Hear it as in gas or gun. Say them ---. What vowel follows g in gas? --- Yes, a. What vowel follows g in gun? --- Yes, u. In got what vowel follows the g? --- Yes, o. Is that all of the vowels? --- Well, no, but which ones are missing? --- That's right, the e and the i.

Now in our lesson for today, what sound does the g spell? --- That's right, the j sound. What vowels followed the g in this lesson? --- That's right the e and i, so we have the j sound of the g's. That must be the rule we were looking for: When the g is followed by a, o, or u, the g is usually the hard sound. When g is followed by e or i, it usually spells the j sound or sometimes called the soft g sound. Today's lesson has the j sound for g, so you will expect to see what vowels following the g? --- That's right, e or i! That will help.

Long ago our English language was influenced by the old Germanic languages in which there was only the hard sound of g as in go. Later, the French influenced our language and they keep the hard sound of g only before a, o, and u, and have the soft g, or j sound before the e or i. This usually holds true unless the words are of Germanic origin, such as get and give from the Germanic tongue; here the g is hard even though followed by e or i. This is why we have these exceptions; our language has been influenced by several languages.

Randy's handwriting hint is to finish writing a word before you dot the i or cross the t in the word. Cross the double t with two lines.

Do you have your paper ready for your 20 spelling words?

1. age - We live in an age of scientific discovery. age
2. germ - A germ may be good or bad. germ
3. page - Turn your page without noise. page
4. magic - There is magic in learning to spell. magic
5. angel - An angel appeared from the heavens. angel
6. range - Cattle were grazing on the open range. range

7. damage - No damage resulted from the accident. damage
8. engine - An engine has a certain number of horse-power.  
engine
9. region - We live in the Great Plains region. region
10. danger - There was danger from crime and lawlessness.  
danger
11. change - We need to change life in the ghetto. change
12. strange - How strange it was inside the cave! strange
13. general - We have the general rule for soft g sound.  
general
14. bandage - An elastic bandage supports a sprained ankle.  
bandage
15. cottage - A tiny cottage nestled beneath the trees.  
cottage
16. package - In the package there was a secret! package
17. imagine - Could you imagine what was in it? imagine
18. giant - The giant lived at the top of the beanstalk.  
giant
19. bridge - The great bridge spans the Golden Gate. bridge
20. charge - Did he charge you for the candy? charge

Now we will check quickly and be sure to watch for mistakes.

Next, we have six power vocabulary words:

1. averaging - The teacher is averaging my grades. averaging
2. cabbage - Cabbage heads grow to be huge in Alaska. cabbage
3. cage - The parakeet in his cage called to me. cage
4. edge - He was perched on the edge of his cup. edge
5. language - We have words influenced by the French language.  
language
6. Words in which g spells zh sound ---, are invariably from the French language. Write garage - The car is in the garage. garage

Now let us check these words quickly.

Now here are the words for good spellers. They are about shapes and measures:

1. dozen - The carton holds one dozen eggs. dozen
2. gross - A crate of twelve cartons holds one gross of eggs.  
gross (That would furnish you an egg for 144  
breakfasts!)
3. average - What is the average circumference of an egg?  
average
4. square - The child's block is square on every face. square
5. triangle - A plane figure with three sides is a triangle.  
triangle
6. rectangle - The desk top is like a rectangle. rectangle
7. perimeter - The distance around the rectangle is its  
perimeter. perimeter

Now check these words quickly to see that you have them right.

Here is your dictation, boys and girls, are you ready?

1. There must be danger of germs in that package of dirty bandages.
2. The sudden change in weather did damage to the cottages in the lake region.
3. A strange giant came charging over the bridge.
4. She imagined that an angel flew like magic from the pages of her story book.
5. Ages ago wild horses ran loose on the range.
6. In general we had no trouble with the engine.

Did you like the story about the sounds of g? I hope you can use the rule to become a better speller. That is all for Lesson 19, boys and girls.

## APPENDIX J

SAMPLE OF A FINAL TEST GIVEN  
EVERY SIXTH LESSON

## Final Test over Units 1-5

1. That is either a crow or a black kite up in the oak tree.
2. It was a treat to lie on the cool beach.
3. We had peas and beans for our main meal at the ranch.
4. It is not wise to scream and shout when you make a speech.
5. The clown had loose pants that were at least one size too big.
6. We cannot hear your voice if you speak in a whisper.

(These sentences include twenty-five representative words from lessons 1-5 and are not put on the tape, but are dictated by the teacher to give her an opportunity to observe the ease with which the students apply spelling to a functional usage.)

## APPENDIX K

AN EXAMPLE OF THE LINGUISTIC  
 APPROACH WITH INDUCTIVE REASONING  
 FOR A SPELLING LESSON ON THE CASSETTE  
 WITH THE FLASH-X FOR THE SLOW LEARNER

LESSON NINE  
 Some Tricky Vowels

Boys and girls, this is Danny Discovery going exploring with you on Lesson Nine to discover some things about tricky vowels. Sometimes the first one speaks and sometime he keeps still and lets the second vowel speak. The second may be saying his name or he may be short. Now we shall see what we can find out. Watch closely! Have you numbered your paper to ten and set your Flash-X at one? --- OK.

Listen. great. Say it. --- great. Flash-X. --- Spell it --- g-r-e-a-t. Write great. Lincoln was a great president. great ---. Flash-X! Check to see if you are right. Which vowel did you hear? --- Yes, the a was long and the e kept still. Turn your dial to number two.

Listen. wear. Say it. --- wear. Flash-X --- Spell wear. --- w-e-a-r. Now write wear. What shall I wear today? wear --- Flash-X to check. Were you right? Hear the new sound of ea with r?

Listen. bear. --- Say bear --- Flash-X. Spell bear --- b-e-a-r. Write bear. He saw a black bear. bear. Flash-X to check. What sound of the vowels did you hear? --- That's right. The r gives the ea a new sound the same as in wear.

Listen. build --- Say build. --- Flash-X. Spell build --- b-u-i-l-d. Write build. We want to build a new house. build. Flash-X to check. Which vowel sound did you hear? --- Yes, the i and was it long or short? --- You are right. It is short. Turn your dial to number five.

Listen. built. This word is nearly like the last one. Say it --- Flash-X. --- Spell built. --- b-u-i-l-t. Which letter did you change? --- Yes, the last one. Write built. The neighbors built a house. built. --- Flash-X to check. Are you right? Turn your dial to number six.

Listen. friend. Say friend. --- Flash-X. Spell friend --- f-r-i-e-n-d. Write friend. You are my friend. friend --- Flash-X to check. Which vowel did you hear? --- Yes, the e.

Did the first or the second vowel speak? --- Yes, the second.  
Was it long or short? --- OK. It was short. Tricky vowels!  
Turn your dial to number seven.

Listen. head. Say head --- Flash-X. Spell head ---  
h-o-a-d. Write head. Use your head when you spell tricky  
vowels! head. --- Flash-X to check. --- Which vowel did you  
hear this time? --- Yes, the first one, and what sound did it  
make? --- Yes, it was short. Turn your dial to number eight.

Listen. bread. --- Say bread. --- Sounds almost like  
head. Flash-X. Spell bread. --- b-r-e-a-d. Write bread. Did  
you make some rye bread? bread --- Flash-X to check. Were you  
right? What is the blend that takes the place of the h in the  
word head? --- Yes, br is right. Turn your dial to number nine.

Listen. Does --- Say does --- Flash-X. Spell does. ---  
d-o-e-s. Did you notice a new sound for o and the e is silent?  
Write does. When does the postman come? does --- Flash-X to  
check. Look closely! Sometimes boys and girls turn the o and  
e around. Just remember that you must spell do and add es. Now  
can you remember? Turn your dial to number ten.

Listen. heard --- Say heard --- Flash-X. Spell heard ---  
h-e-a-r-d. Write heard. We heard a new song. heard. ---  
Flash-X to check. Did you spell hear and add d? --- That's  
right. It is a form of the verb hear. Now turn your dial back  
to one. Turn your paper over and number on the back side to  
ten to take your test and then after you have finished, you  
can check with your Flash-X.

1. great - Washington was a great man. great  
Now write a review word. blue - The sky is blue. blue
2. wear - Wear a coat when it rains. wear  
Now your review word is been. Where have you been? been
3. bear - Is it a cinnamon bear? bear  
Now write said. Listen to what is said. said
4. build - What did the carpenter build? build  
Now write learn. Learn to be polite. learn
5. built - Who built the bridge? built  
Now write guess. Did you guess your answer? guess
6. friend - She is your friend. friend  
Now write friends. Who are her friends? friends
7. head - Your brain is in your head. head  
Now write heads. Our heads are useful to us. heads
8. bread - Do you like fresh bread? bread  
Now write breads. Mother bakes several kinds of breads.  
breads



9. does - Where does the sun go at night? does  
Now write doing. What were you doing? doing
10. heard - We heard from our folks. heard  
Now write hear. Let us hear from you? hear

Now take your Flash-X and check all twenty words. This has been your hardest test and Danny hopes you made it all right. Show your teacher your paper. That is all of lesson nine.

## APPENDIX L

AN EXAMPLE OF THE LINGUISTIC  
 APPROACH WITH INDUCTIVE REASONING  
 FOR A SPELLING LESSON ON THE CASSETTE WITH FLASH-X  
 FOR THE SLOW LEARNER

LESSON TEN  
 More Long Vowel Words

Boys and girls, this is Danny Discovery going exploring with you on Lesson Ten with some more long vowel words. We will hear the long sound of the vowel in each word in this spelling list. Watch to see whether the two vowels are together! Sometimes they are, you know!

Have you numbered your paper to ten and turned the dial of the Flash-X to one?

Listen. five. Say five. --- Flash-X. Spell five --- f-i-v-e. Write five. Five little birds were sitting on a line. five. --- Flash-X to check. --- Were you right? What is the vowel on the end of the word? --- Yes, e. Turn the dial to two.

Listen. nine. Say nine --- Flash-X. Spell nine. --- n-i-n-e. Write nine. It was nine o'clock. nine. Flash-X to check. What is the last letter? --- Yes, silent e. Turn to number three.

Listen. fine. Say fine --- Flash-X. Spell fine. --- f-i-n-e. Write fine. The weather is fine. fine. It rhymes with nine. Flash-X to check. Were you right? Turn your dial to four.

Listen. mine. Say mine --- Flash-X. Spell mine. --- m-i-n-e. Write mine. The book is mine. mine. It rhymes with fine. Flash-X to check. Were you right? Notice the i is long, then there is a consonant and last is a silent e. Turn to number five.

Listen. side. Say side. --- Flash-X. Spell side --- s-i-d-e. Write side. I chose him on my side. side. Flash-X to check. What is the ending pattern? --- Yes, v-c-v again. And the last vowel is a silent e. Turn your dial to number six.

Listen. fire. Say fire --- Flash-X. Spell fire --- f-i-r-e. Write fire. The house was on fire! fire. Flash-X to check. What was the ending pattern again? --- Yes, again, v-c-v with the silent e on the end. Turn your dial to seven.

Listen. game. Say game. --- Flash-X. Spell game --- g-a-m-e. Write game. What is your favorite game? game --- Flash-X to check. What was the ending pattern? Yes, again it was v-c-v with the silent e on the end. Turn to number eight.

Listen. snake. Say snake --- Flash-X. Spell snake --- s-n-a-k-e. Write snake. It was a little garter snake. snake. Flash-X to check. Give the ending pattern --- Yes, v-c-v with silent e on the end. You can spell many words with this same pattern. Turn your dial to number nine.

Listen. late. Say late. --- Flash-X. Spell late --- l-a-t-e. Write late. She was late coming to school. late --- Flash-X to check. What is the ending pattern? --- Yes, v-c-v with silent e again. Turn your dial to number ten.

Listen. rose. Say rose --- Flash-X. Spell rose. --- r-o-s-e. Write rose. The rose was red. rose. --- Flash-X to check. What is the pattern? --- Yes, v-c-v with silent e. Turn your dial back to number one and turn your paper over so you can write your test. Number to ten.

1. five - I have five fingers. five  
Now write alive. The rabbit was alive. alive
2. nine - There are nine cookies. nine  
Now write line. Only one telephone was on the line. line
3. fine - She felt fine. fine  
Now write dine. They went out to dine. dine
4. mine - This card is mine. mine  
Now write wine. Wine is red. wine
5. side - What side is yours? side  
Now write wide. How wide is the river? wide
6. fire - We had a fire drill. fire  
Now write tire. We had a flat tire. tire
7. game - Basketball is a good game. game  
Now write lame. The pony is lame. lame
8. snake - The snake is not poisonous. snake  
Now write brake. We need a new brake. brake
9. late - The hour is late. late  
Now write mate. The robin called to his mate. mate
10. rose - The sun rose early. rose  
Now write nose. He froze his nose. nose

Now turn your dial back to one and check your words carefully. Did you miss any? Take your paper to your teacher and Danny hopes you spelled every one correctly. That is all of lesson ten.

## APPENDIX M

AN EXAMPLE OF A FINAL TEST  
FOR THE CASSETTE AND FLASH-X LESSONS  
GIVEN EVERY SIXTH LESSON

## Final check over lessons 6-11

1. kind - What kind of pet have you? kind
2. cost - What did the bat cost? cost
3. paint - We will paint the outside of the house. paint
4. near - The duck is not very near. near
5. head - The head of the cardinal has a crest. head
6. heard - We heard the band concert last night. heard
7. five - Five plates were on the table. five
8. rose - The rose is fragrant. rose
9. while - I will wait while you go fishing. while
10. these - These are my friends. these
11. small - The shoe was too small. small
12. few - Few whooping cranes are left. few
13. cream - Do you like strawberry ice cream? cream
14. year - That was a good year. year
15. build - Watch the beaver build the dam! build
16. learn - Learn your lessons well. learn
17. nine - You should go to bed at nine. nine
18. game - We played a game of soccer. game
19. children - There were 30 children in the game. children
20. sang - Father sang bass in the choir. sang

(These words were chosen randomly and were to be pronounced by the teacher so that she could watch the ease or difficulty with which the children wrote the test. They did not write the sentences.)

## APPENDIX N

## T A P E R E C O R D E R S C H E D U L E S

<u>MO. DAY</u>	<u>TUESDAY</u>	<u>WEDNESDAY</u>	<u>THURSDAY</u>	<u>FRIDAY</u>
8:15 1.	1.	1.	1.	1.
2.	2.	2.	2.	2.
3.	3.	3.	3.	3.
4.	4.	4.	4.	4.
5.	5.	5.	5.	5.
6.	6.	6.	6.	6.
7.	7.	7.	7.	7.
8.	8.	8.	8.	8.
9:45 1.	1.	1.	1.	1.
2.	2.	2.	2.	2.
3.	3.	3.	3.	3.
4.	4.	4.	4.	4.
5.	5.	5.	5.	5.
6.	6.	6.	6.	6.
7.	7.	7.	7.	7.
8.	8.	8.	8.	8.
10:00 1.	1.	1.	1.	1.
2.	2.	2.	2.	2.
3.	3.	3.	3.	3.
4.	4.	4.	4.	4.
5.	5.	5.	5.	5.
6.	6.	6.	6.	6.
7.	7.	7.	7.	7.
8.	8.	8.	8.	8.
12:45 1.	1.	1.	1.	1.
2.	2.	2.	2.	2.
3.	3.	3.	3.	3.
4.	4.	4.	4.	4.
5.	5.	5.	5.	5.
6.	6.	6.	6.	6.
7.	7.	7.	7.	7.
8.	8.	8.	8.	8.

IMPROVEMENT OF SPELLING ACHIEVEMENT  
AND ITS RELATION TO IMPROVEMENT OF READING ACHIEVEMENT

by

DORIS D. SMITH

B. A., Marymount College, 1962

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AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

College of Education

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1969

## HYPOTHESES

1. Do fifth graders make a significant improvement in spelling achievement when self-pacing materials on tape are used as compared to the usual weekly lessons of the commercial textbooks?

2. Is there any observation which may be made in reading achievement when spelling is taught on the tape recorder as compared to the usual weekly lessons of the commercial textbooks?

## PROCEDURE

A list of 100 words taken at random from the fifth grade spelling list was administered to both the control group and the experimental group as a pre-test and as a post-test. These words were arranged in 13 groups of phoneme-grapheme and structural patterns so that observations could be made concerning errors corrected.

The Iowa Test of Basic Skills in Spelling was administered as a pre-test and as a post-test. The Otis Quick-Scoring Test of Mental Ability was given to determine the mental aptitude of all students. The SRA Mental Ability and SRA Achievement Tests were administered in November and again in April.

In the EG children progressed as fast as they could perfect each spelling lesson of basic words, a power vocabulary, and some special words to challenge the good spellers. Each

lesson had dictation of sentences which the pupils wrote for functional application of the generalization of the lesson. Every sixth lesson was a test which the pupil asked the teacher to give.

The accelerated students who finished the fifth grade spelling lessons in 18-24 weeks worked in teams on supplementary spelling lessons.

### FINDINGS

The expectancy of achievement in spelling between the two groups was quite close in September. The results of the Otis Quick-Scoring Mental Ability tests showed EG no significant difference between the EG and the CG.

Findings concerning the first hypothesis from the pre-tests of the SRA Achievement Test showed virtually no differences between the EG and CG. However, on Feb. 25, 1969 the Stanford Achievement Tests showed the EG to be .9 grade level above the CG in spelling.

The most significant observation in spelling was the results of the random pre-test and post-test. EG showed a 16.4% gain over CG in correction of errors in the post-test.

The findings of the second hypothesis were more significant. In the SRA Vocabulary tests EG showed 1.2 grade level gain greater than CG in the four months between tests. The SRA Reading Comprehension showed 1.5 grade level gain for



EG over CG. The Stanford Achievement Reading test also favored EG but did not show as great a difference.

#### CONCLUSIONS

1. The individualized, self-pacing spelling on tape was as efficient as the usual weekly spelling lessons and showed it to be some better.
2. Reading seemed to show improved achievement because of the spelling method.
3. Accelerated children were able to learn up to 840 more words than any child in the CG because of self-pacing methods.
4. Slower achievers were able to succeed at the level of material provided with the Flash-X and taped instructions.
5. There are unmeasured aspects in this study such as, motivation for spelling, assumption of individual responsibility for progress, opportunity for both the accelerated and the slow achievers to succeed, and the favorable climate for learning.